

WHAT IS CLAIMED IS:

1. A method for producing a biologically active protein, comprising:
transforming a strain of *E. coli* with a plasmid having at least one copy
of an expressible gene encoding a biologically active protein, operably linked to
a T7 polymerase promoter, wherein the *E. coli* strain is capable of expressing
the gene for T7 RNA polymerase;
infecting the transformed bacterial host cell with a bacteriophage λ
capable of mediating delayed lysis; and
cultivating the *E. coli* host cell under a culture condition that induces
lytic growth of said cell without lysis until a desired level of production of said
protein is reached, wherein said protein is produced as a soluble, biologically-
active protein.
2. The method of claim 1, wherein the bacteriophage λ has a temperature-
sensitive mutation.
3. The method of claim 2, wherein the temperature-sensitive mutation is
cI₈₅₇.
4. The method of claim 2, wherein prior to the cultivating step, the *E. coli*
host cells are grown at a temperature which prevents lytic growth of the bacteriophage
 λ .
5. The method of claim 1, wherein the bacteriophage λ has a mutation in at
least one gene capable of mediating delayed lysis.
6. The method of claim 5, wherein the at least one gene capable of
mediating delayed lysis is selected from the group consisting of N, Q and R.
7. The method of claim 1, wherein the strain of *E. coli* produces a
suppressor for the repair of amber-mutations.
8. The method of claim 1, wherein the strain of *E. coli* lacks a suppressor
for the repair of amber-mutations.
9. The method of claim 1, wherein the infecting bacteriophage λ is
provided at a multiplicity of infection in a range of about 1 to about 100.
10. The method of claim 1, wherein the infecting bacteriophage λ is
provided at a multiplicity of infection in a range of about 10 to about 25.

11. The method of claim 1, wherein bacteriophage-mediated delayed lysis of the strain of *E. coli* is delayed at higher multiplicities of infection relative to lower multiplicities of infection.

5 12. The method of claim 1, wherein the expressible gene encodes a human acidic fibroblast growth factor.

13. The method of claim 12, wherein the human acidic fibroblast growth factor contains 134 amino acids.

14. The method of claim 12, wherein the human acidic fibroblast growth factor contains 140 amino acids.

10 15. The method of claim 12, wherein the human acidic fibroblast growth factor contains 146 amino acids.

16. The method of claim 12, wherein the human acidic fibroblast growth factor contains 155 amino acids.

15 17. The method of claim 16, wherein the human acidic fibroblast growth factor has the sequence as set forth in SEQ ID NO: 1.

18. The method of claim 1, wherein the expressible gene encodes a human growth hormone.

19. The method of claim 1, wherein the expressible gene encodes a human interferon.

20 20. The method of claim 1, wherein the expressible gene encodes an *E. coli* methionine amino peptidase.

21. The method of claim 1, wherein the gene for T7 RNA polymerase is under the control of an inducible promoter.

25 22. The method of claim 21, wherein the inducible promoter is a lac UV 5 promoter.

23. A chemically synthesized nucleic acid consisting essentially of the sequence set forth in SEQ ID NO: 1.

24. A method of producing a biologically active protein comprising:

30 a) growing a first strain of *E. coli* cells, which harbor a strain of bacteriophage λ , wherein the bacteriophage λ has a temperature-sensitive mutation,

b) adjusting the temperature to provide for lysis of the first strain of *E. coli* cells and release of the bacteriophage λ ,

c) providing a second strain of *E. coli* cells which have been transformed with a plasmid having at least one copy of an expressible gene encoding said biologically active protein, said expressible gene being operably linked to a T7 polymerase promoter under the control of an inducible promoter, wherein the second strain of *E. coli* cells may be induced to express the gene for T7 RNA polymerase by addition of an inducer;

d) infecting the second strain of *E. coli* cells with the bacteriophage λ released from the first strain of *E. coli* cells; and

e) incubating the infected second strain of *E. coli* cells in a culture medium containing the inducer, such that protein is produced and released into the culture medium upon lysis of the second strain of *E. coli* cells, wherein said protein is produced as a soluble, biologically-active protein at a concentration greater than 100 microgram /ml.